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ABSTRACT

Every educational change occurs with an equal and opposite reaction to that change. Some changes and their opposing reactions which illustrate this point are: (1) team teaching versus the negative dynamics of group planning; (2) justifications for funding special education versus emphasis on average and gifted students; (3) school site management as a way to democratically involve parents in educational decision making versus traditional lines of school management; (4) collaboration among teachers, universities, and administrators to establish a quality curriculum versus decision making by conscientious individuals on site; (5) attention to the relevancy of what is taught in schools versus stability in the face of rapid curricular change; (6) outcome-based education versus concepts and generalizations that cannot be measured; (7) portfolio assessment versus adequate evaluation and selection of portfolio materials; (8) Gardner's Theory of Multiple Intelligences versus enhancement of individual talents and abilities within existing curricular subjects; (9) integrated curricula versus appreciation for individual academic disciplines; (10) and the whole Language Approach versus a better balance between whole-language and phonics-based procedures. The presence of opposite reactions seems to indicate a need to be judicious when considering new movements in education. In negotiating educational change, the best course may be to strike a balance between competing ideas. (JW)

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TO EVERY ACTION THERE IS AN OPPOSITE AND EQUAL REACTION: AN ESSAY ON TEACHING

Marlow Ediger

Newton's third law of physics states that for every action there is an opposite and equal reaction. This seems to be true in many and maybe even in all cases in teaching pupils. In this essay with no footnotes and no direct quotes, I will provide examples of meaning. The examples involve my experiences in education from 1949 to the present including thirty years as university professor involving teaching education courses and supervising student an regular teachers. I will give examples of for every action there is an opposite and equal reaction, such as in team teaching. Many educators proclaim the merits of team teaching with the following pros given, among others:

1. teachers do not work in isolation but learn from other professionals in planning the curriculum for a given set of learners.
2. more than one mind is better than one mind in determining objectives, learning opportunities, and evaluation procures for teaching a group of learners.

The opposite reaction includes the following cons of team teaching:

1. teachers who fail to get along in team teaching face a long school year in attempting to work harmoniously.
2. a dogmatic person on a team may dominate the discussion so that the best objectives, learning opportunities, and evaluation procedures do not come into being.

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Action versus Reaction

Presently, there is much emphasis placed upon cooperative learning in educational literature and in workshops. Cooperative learning has gone under different names over the decades. John Dewey in his laboratory school connected with the University of Chicago in 1896 stressed learners working in committees. His philosophy was that pupils do not like to work by themselves in ongoing lessons and units of study. Also in society, people work in groups to solve problems in the societal arena.

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Perhaps, the reaction to cooperative learning and Dr. Dewey's thinking would be the following:

1. Kenneth and Rita Dunn stress that working individually rather than with others may well be a recommendable style of learning.

2. slow learners may come to depend upon the fast achievers doing all or most of the work in cooperative learning.

To resolve the issue of cooperative learning versus individual endeavors, the teacher might stress both during the school day. Certainly, pupils should learn to work harmoniously with others as well as do things involving the self only.

As a second issue to consider, much money is spent on funding special education programs, usually for the handicapped pupil. Generally, it costs three times as much to fund a handicapped child's education as compared to a normal pupil. There are selected educators who believe that teachers need to assist the handicapped to catch up with the more talented and gifted pupils.

The reactions, opposite and equal reaction, to the philosophy of PL 94-142 laws (Education for all handicapped pupils) include the following:

1. the business world advocates that pupils graduate from high school ready for work at the work place. They stress the lack of qualified workers ready for the work place. Should an increased amount of the school budget be spent on the average, the talented and the gifted? It is not too likely that a multiply handicapped pupil will become the top person for a work place position.

2. the work of the teacher is to assist all pupils to achieve as much as possible rather than guiding slow learners to catch up with the others. If slow learners are to catch up with others, do we keep the more able pupil from learning as much as possible?

In resolving this issue, it would be good to evaluate how the money devoted to schooling is being spent. I believe there is room here for much modification in terms of how much is spent for handicapped as well as for other learners in the school setting. Each and every pupil needs to have needed assistance to achieve optimally.

Third, school site management has become a popular concept to emphasize in educational literature. Much criticism has been hurled at the concept of a bureaucracy when thinking of the lines of organization in the traditional school. School site management is to focus upon a particular school making decisions pertaining to curriculum and budgetary items. Thus, for example, two parents, four teachers, and the principal might make up a school site management team. Students might also be represented on the school site management team. With a smaller group involved in decision making for a school as compared to the traditional superintendent, school board, and principals line of organization, school site management stresses that those being actively involved in the local school such as parents, teachers, and the principal should be the deciders of curriculum matters and how money in the budget will be spent.

Newton's third law would state that there are opposite and equal reactions in terms of the following:

1. the school site management team could have extremely bad public relations with constituents thus avoiding interaction between the team and the larger public. To have a school site management team function democratically and well, they need input from nonteam members in the community.

2. the school site management team could also misuse budgetary moneys as is true of traditional lines of school organization. It takes time and education to understand a budget and how to use the involved moneys to guide learners in achieving objectives.

Within a school system, there should be opportunities to emphasize both school site management and more traditional systems of school administration. I would emphasize that those in the school site management team realize the importance of input from all in the school district or area to be served. The school site management team needs to be well educated and possess skills to involve people in decision making. Old hierarchies must be avoided in making decisions so that democracy as a way of life may be in evidence.

Fourth, considerable stress is placed upon collaboration among

teachers, teachers and universities, and faculty/ administration to develop a quality curriculum of objectives for learner attainment, activities and tasks for learners to achieve the stated objectives, as well as evaluation procedures which measure pupil progress. Collaboration involves professionals working in committees to improve the curriculum. Group, not individual endeavors, are then in the offing.

Opposite and equal reaction to much collaboration in curriculum improvement might be the following:

1. group decisions might not necessarily be better than conscientious individuals making decisions. Not everyone works well in committees, but prefers individual tasks to complete.

2. there are always chances that quarrels and disagreements might occur when collaboration efforts are in the offing.

In resolving this issue, I believe that teachers and administrators need to be educated in the area of group dynamics and public relations. They need to learn to respect others and their ideas as well as understand the concept of culture thoroughly. Schools and school systems should not rush into the area of instantaneous collaboration endeavors, but move into this field gradually. It should also be remembered that there are individual decisions to be made by teachers such as choosing objectives, learning activities, and evaluation procedures in a self contained classroom.

Fifth, relevancy is a key concept referred to in developing a curriculum which is motivating to students. Many criticisms are hurled at schools not being relevant for students. Many modifications and changes have been made in the curriculum, but the charges are still being made that the curriculum is irrelevant to students. Many writers of educational literature emphasize continually and harp about an irrelevant curriculum which turns students off on learning, but the same writers do not state what would make for relevancy. Writers in education do advocate that continual changes and modifications be made in terms of curricular offerings.

An opposite and equal reaction pertaining to emphasis placed upon continual change in the curriculum is the following:

1. is too much change being emphasized in educational literature with little stress placed upon stability in teaching and learning situations? Certainly, there is much to evaluate in the school curriculum to improve instruction, but is change stressed for the sake of change in many writings of educators? A certain amount of continuity and stability also needs to be in evidence since a foundation must exist upon which modifications can be made.

2. it appears that there is much disagreement in terms of what kinds of end results should be in evidence as a result of change. I have not heard nor read what should be stressed when working toward change in the curriculum so that unity is in evidence. There is no basic agreement on what vision or visions the schools should achieve in terms of desired results. There certainly are diverse kinds of changes emphasized by advocates of change. Thus a state of indecision or uncertainty is an end result.

Sixth, results driven instruction is receiving much attention in educational literature and conventions. Educators have always stressed results from pupil learning. When I started teaching 1952-53 school year, my intent in teaching was to produce results or learning within pupils. There were no state mandated objectives, nor required testing. This was left to the instructor of the course on the West Bank of the Jordan. When I returned to the US and taught during the 1955-56 school year, there also were no state mandates for securing results from pupils. However, I was very much interested in having pupils learn. My intent was to obtain optimal achievement from each pupil. Today's emphasis upon results driven instruction stress measurable achievement from learners in terms of test results. There are results only if the tests indicate so when measuring pupil achievement.

The opposite and equal reaction stresses the following questions:

1. is all learning measurable or are there concepts, generalizations, and attitudes attained by pupils that are not measurable?

2. is results driven education something new or has the wording changed for an old concept? During the 1920's, behaviorally stated

objectives were used in teaching so that pupil progress could be reported to parents by administrators as to how well a child was doing in the school setting. Haven't good teachers always wanted results or optimal achievement from pupils? A better term than results driven instruction needs to be invented to determine what kind of results we want from pupils.

I believe we have gone overboard on wanting results form pupils that are observable and "objective." Much of life is subjective such as values, attitudes, and beliefs. Knowledge can be amazed and interpreted in different ways. Thus for example social studies is much more subjective than mathematics, particularly when viewing basic addition, subtraction, multiplication, and division facts.

Seventh, the portfolio concept has become popular in terms of pupils revealing what they have learned. The results from pupil achievement become the content of a learner's portfolio. The portfolio is much more comprehensive than test results from norm and criterion referenced testing as well as from teacher written tests. Subjective items may well appear in the portfolio such as art and written products, snapshots of constructed items, and videotape of pupil participation in class, among other items to indicate pupil progress in goal attainment. I believe portfolios are a step in the right direction to reveal learner progress in school. Measurement specialists will tend to like objective results from pupils such as standardized and norm referenced tests. To a measurement specialist, numerical results indicate objectivity to the lay public. However, test results are just as subjective as are portfolios to indicate pupil achievement. After all, human beings write the test items, no matter how high the reliability and validity of the test is. It is only after pupils have taken a published test that numerical results such as standard deviation, grade equivalents, stanine scores, among others, are emphasized.

The opposite and equal reaction to portfolios are the following comments:

1. will there be adequate time available for at least two people to appraise all the portfolios present to reveal learner progress?

2. with much documentation of pupil progress, what should go into a portfolio that would indicate representative work of a pupil in school?

Eighth, the Theory of Multiple Intelligence (Dr. Howard Gardner) has received much publicity in major educational journals as well as at professional meetings of educators. The seven intelligences developed by Dr. Gardner and associates are linguistic- verbal, logical-mathematical, musical, verbal- spatial, kinesthetic, interpersonal, and intrapersonal. Intelligence in the sciences and the social sciences/ social studies are not mentioned in the description of these seven intelligences. There is a reference made to logical- mathematical in that this is highly developed in scientists, among other fields of endeavor such as mathematicians, accountants, computer programmers, and statisticians. In the visual-spatial intelligence reference is made to hunters, navigators, interior designers, architects, artists, and inventors. Inventors stress the development of technology which leans upon science. Still, these two categories do not pinpoint the various endeavors of work in science such as physicists, chemists, astronomers, biologists, and geologists. I would say the theory of multiple intelligences is weak in stressing science as a field of talent and giftedness for learners. Talent and giftedness in the social sciences is even less identified in the multiple intelligences theory. Lewis Thurstone in 1938 through factor analysis as a statistical technique discovered six related intelligences. These were verbal meaning, space, number, memory, word fluency, and reasoning. J. P. Guilford in 1959 found 120 factors of intelligence in the structure of the intellect. I wholeheartedly concur that pupil's talents and abilities need identification and nurturing. It would be immoral not to identify and assist each pupil to attain optimally.

An opposite and equal reaction to the theory of multiple intelligence is the following:

1. why cannot pupil's talents and abilities be nurtured using the categories of language arts and its component vocabularies, science and its specialized academic areas, the social sciences and their

component parts and specialized fields, mathematics, physical education and health, art, and music? These seven intelligences provide a framework for guiding pupils to attain optimally in each curriculum area.

2. why not continually identify new areas of intelligence that pupils possess to become proficient in and reveal talents. The curriculum needs to be broadened to incorporate more areas of intelligence of pupils.

Ninth, much stress is placed upon the integrated curriculum. Toward the beginning of the twentieth century, most schools emphasized the separate subjects curriculum, such as history was taught as a separate subject. Many educators then believed that subject matter areas should be taught in a related manner such as history and geography being related. The result was the correlated curriculum. As time went on, more and more educators believed that correlation did not go far enough in relating different curriculum areas. Thus, for example, the fused curriculum was stressed. History, geography, economics, and political science were taught as being related. John Dewey (1859- 1952) advocated problem solving as a philosophy of education. With problem solving, each identified problem needs information that leans upon what is relevant in offering solutions, not upon a specific academic discipline or disciplines. The integrated curriculum resulted. Subject matter then has no boundaries and borders. Information in problem solving stressed relevant subject matter in offering solutions, not a specific subject matter discipline.

An opposite and equal reaction pertaining to the integrated curriculum are the following considerations:

1. should pupils learn to appreciate and understand what makes for an academic discipline such as history which distinguishes it from other academic disciplines?

2. could problem solving be stressed within an academic discipline such as history? Historians, like other academicians, also select problems to solve within their academic areas of specialty.

Tenth, whole language instruction has become quite popular

among educators. How much of wholeness is wanted in any curriculum area is up for debate by some educators. In reading instruction, pupils are guided in reading the whole story or selection. Selected reading specialists then frown upon having pupils analyze needed words for identification purposes. The content lacks wholeness for pupil reading when phonics is taught to guide learners in word identification. In the past, and some teachers still do this, pupils have had sequential learning activities in phonics on the primary grade levels. Maybe, a phonics workbook contained activities for pupils to complete on sequential days of schooling. The ultimate goals of phonics instruction are to have pupils become proficient in relating symbols (graphemes) with sounds (phonemes). The argument given by phonics experts is that pupils become independent in unlocking new words with a strong background in phonics. Whole language experts argue that phonics instruction segments content read so that pupils do not secure the meaning and enjoyment of literature that otherwise would be the case.

An opposite and equal reaction might be the following pertaining to whole language procedures in reading instruction:

1. perhaps, the teacher needs to observe the individual pupil when determining which procedures to use in teaching reading. Not all pupils, of course, learn to read through the use of a single method of instruction.

2. should there be a better balance among whole word and phonics instruction in guiding pupils to learn to read effectively?

In Closing

Educators need to avoid going overboard on one method or philosophy of teaching. To be sure, there are approaches that need to be avoided such as physical punishment to motivate pupils in wanting to learn.

The writer has discussed the following in which selected educators may perceive only one point of view: team teaching, cooperative learning, much higher funding for special education pupils as compared to other learners, school site management, continual collaboration

among school personnel, measurability of pupil results in learning, portfolios, theory of multiple intelligences, the integrated curriculum, and whole language approaches in teaching reading.

There are, for example, numerous alternatives to team teaching as an approach to improving the curricula. However, within the framework of team teaching, one could have teachers volunteer if they desire to be members of a teaching team. Harmonious relationships among the members might then be more likely to accrue. Thus a school system may stress both team and individual endeavors in teaching. I would like to mention another concept pertaining to which there is much dogmatism in educational literature and at teacher education conventions and that is the pros of heterogeneous grouping of pupils and the evils of homogeneous grouping. I fail to see that pupils should be grouped heterogeneously all day long for instruction. I do not believe the talented and gifted are assisted and challenged to learn under these circumstances. Too often, the gifted and talented are asked to help slower learners in cooperative learning. Should the talented and gifted also be guided to learn as much as possible and have their very own goals to attain? In a democratic society, the talents and abilities of each are important and need to be developed optimally. With the heterogeneous- homogeneous controversy in grouping pupils for instruction, I would say there is room for both plans. For example in the teaching of reading, I would always group pupils homogeneously for reading instruction. Why? It is too difficult for a teacher to teach a classroom of twenty plus pupils when providing for individual differences in reading. There are too many in a group to provide the necessary individual attention. Should there be three reading groups, each with heterogeneous groups in the classroom, the range of achievement is too great for learners here to obtain the quality of teaching needed in reading. There are times, to be sure, in which heterogeneous grouping should be in evidence such as in discussion groups in all curriculum areas. In discussion groups, the slower learners may lean upon their listening vocabularies to comprehend and understand. It is more complex for a pupil to attain well in reading abstract words in reading

instruction as compared to engaging in listening to learn and achieve.

In teaching and learning, Newton's third law applied to education, stresses the need to harmonize opposites. It can definitely be done.